CHAPTER 1

INTRODUCTION

1.1 SCOPE AND PURPOSE

The U.S. Environmental Protection Agency (EPA) proposes and promulgates water effluent discharge limits (effluent limitations guidelines and standards) for industrial sectors. This document summarizes both the costs, economic impacts, and benefits of technologies that form the bases for the final limits and standards for the concentrated aquatic animal production (CAAP) industry.

The Federal Water Pollution Control Act (commonly known as the Clean Water Act [CWA, 33 U.S.C. §1251 et seq.]) establishes a comprehensive program to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (section 101(a)). EPA is authorized under sections 301, 304, 306, and 307 of the CWA to establish effluent limitations guidelines and standards of performance for industrial dischargers. The standards EPA establishes include:

- Best Practicable Control Technology Currently Available (BPT). Required under section 304(b)(1), these rules apply to existing industrial direct dischargers. BPT limitations are generally based on the average of the best existing performances by plants of various sizes, ages, and unit processes within a point source category or subcategory.

- Best Available Technology Economically Achievable (BAT). Required under section 304(b)(2), these rules control the discharge of toxic and nonconventional pollutants and apply to existing industrial direct dischargers.

- Best Conventional Pollutant Control Technology (BCT). Required under section 304(b)(4), these rules control the discharge of conventional pollutants from existing industrial direct dischargers.[1] BCT replaces BAT for control of conventional pollutants.

- Pretreatment Standards for Existing Sources (PSES). Required under section 307(b). Analogous to BAT controls, these rules apply to existing indirect dischargers (whose discharges flow to publicly owned treatment works [POTWs]).

- New Source Performance Standards (NSPS). Required under section 306(b), these rules control the discharge of toxic and nonconventional pollutants and apply to new source industrial direct dischargers.

- Pretreatment Standards for New Sources (PSNS). Required under section 307(c). Analogous to NSPS controls, these rules apply to new source indirect dischargers (whose discharges flow to POTWs).

[1] Conventional pollutants include biochemical oxygen demand (BOD), total suspended solids (TSS), fecal coliform, pH, and oil and grease.

Prior to this rule, EPA defined "concentrated aquatic animal production facilities" at 40 CFR 122, Appendix C, and identified the need for them to obtain National Pollutant Discharge Elimination System (NPDES) permits, but had not set national effluent limitations guidelines or standards for these or a subset of these dischargers.

1.2 DATA SOURCES FOR THE FINAL RULE

EPA's economic analysis relied on a wide variety of data and information sources. Data sources used in the economic analysis include:

- EPA's Screener Questionnaire for the Aquatic Animal Production Industry (USEPA, 2001)
- EPA's Detailed Questionnaire for the Aquatic Animal Production Industry (USEPA, 2002)
- U.S. Department of Agriculture (USDA), particularly USDA's *1998 Census of Aquaculture* (USDA, 2000)
- Joint Subcommittee on Aquaculture (JSA). JSA is a Federal interagency coordinating group to increase the overall effectiveness and productivity of Federal aquaculture research, technology transfer, and assistance programs. It was authorized under the National Aquaculture Act of 1980 and the National Aquaculture Improvement Act of 1985. (For more information see: http://ag.ansc.purdue.edu/aquanic/jsa/).
- Academic literature
- Industry journals
- General economic and financial references

The use of each of these major data sources is discussed below.

EPA collected facility-level production data from individual aquatic animal producers through a screener survey administered under the authority of the CWA Section 308 (USEPA, 2001). EPA used response data from the screener survey to classify and subcategorize facilities by production method, species produced and production level, and water treatment practices in place prior to the proposed regulation. EPA identified the subset of concentrated aquatic animal production facilities deemed to be in scope of the proposed rule.

EPA used the information from the screener survey to identify a subset of facilities to receive the detailed questionnaire. Like the screener survey, EPA administered the detailed survey under the authority of the CWA Section 308 (USEPA, 2002). EPA used response data from the survey to classify and subcategorize facilities by production method, species produced and production level, and water treatment practices in place prior to the proposed regulation. For commercial operations, the survey instrument collected financial and economic information at the aquaculture enterprise, the facility, and the company that owned the facility. For public or noncommercial operations, EPA collected financial and economic information on operating costs and funding sources. Due to the timing of the surveys and

the rulemaking schedule, the proposal analysis was based on the screener survey data while the detailed survey formed the basis for the results presented in the Notice of Data Availability (USEPA, 2003) and for final promulgation.

EPA relied heavily on the USDA *1998 Census of Aquaculture* to profile the industry at proposal (USDA, 2000). EPA relied on the Census for the national number of aquaculture facilities, which establishes a starting point to evaluate EPA's regulatory flexibility.

The Joint Subcommittee on Aquaculture (JSA) formed an Aquaculture Effluents Task Force (AETF) to assist EPA. The Economics Subgroup provided enterprise budgets, additional references, industry literature and journal articles to EPA. An enterprise budget depicts financial conditions for representative aquaculture facilities. Enterprise budgets are useful tools for examining the potential profitability of an enterprise prior to actually making an investment. To create an enterprise budget, an analyst gathers information on capital investments, variable costs (such as labor and feed), fixed costs (e.g., interest and insurance), and typical yields and combines it with price information to estimate annual revenues, costs and return for a project. By varying different input parameters, enterprise budgets can be used to examine the relative importance of individual parameters to the financial return of the project or to identify breakeven prices required to provide a positive return. The Economics Subgroup provided EPA with enterprise budgets or reports for trout, shrimp, hard clams, prawns, and alligators (Docket OW-2002-0026, Section 8.2.3 DCNs 20073, 20080, 20082, 20084, 20131, and 20132).

EPA used academic journals and industry sources such as trade journals and trade associations to develop its industry profile to formulate a better understanding of industry changes, trends, and concerns. As necessary, EPA cites various economic and financial references used in its analysis throughout this report. These references may be in the form of financial and economic texts, or other relevant sources of information germane to the impact analysis.

1.3 OVERVIEW OF CHANGES TO EPA'S ECONOMIC METHODOLOGY

For the proposed rule, EPA evaluated projected economic impacts using screener questionnaire data which did not include financial or economic information beyond revenues and limited production data. As a consequence, the proposal's impact analysis was based on compliance costs for model facilities, frequency factors for extrapolating costs to a group of facilities represented by a model, and sales or revenue tests. Revenue tests involve simple comparisons of compliance costs with facility revenues. For noncommercial facilities, in lieu of revenues, EPA imputed a value to their production based on annual harvest and commercial prices. Similar revenues tests were applied to both commercial and noncommercial facilities. EPA estimated the number of small businesses from a special tabulation of USDA's *1998 Census of Aquaculture* (USDA/NASS, 2002).

For the final rule EPA is able to conduct a more detailed financial impact analysis because of the availability of facility-specific pairs of costs and revenues collected in the detailed questionnaire after proposal. The availability of these data permit a more detailed analysis for different subpopulations within the regulated community within the scope of this rule, including both commercial and noncommercial aquaculture facilities.

1.4 REPORT ORGANIZATION

This report is organized as follows:

- Chapter 2—EPA Detailed Questionnaire. Summarizes information EPA collected in the detailed questionnaire for the facilities considered within the scope of the final rule.

- Chapter 3—Economic Methodology. Summarizes EPA's methodology to examine incremental pollution control costs and their associated economic impacts.

- Chapter 4—Regulatory Options: Descriptions, Costs, and Conventional Pollutant Removals. Presents a brief description of the regulatory options considered by EPA. More detail is given in the *Development Document* (USEPA, 2004).

- Chapter 5—Economic Impact Results. Presents the results of EPA's analysis of the estimated annual costs and the economic impacts on regulated facilities associated with the final regulations, using the methodology presented in Chapter 3.

- Chapter 6—Small Entity Flexibility Analysis. Presents the results of EPA's analysis of the possible financial effects on small businesses that are affected by the final regulations, as required under the Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act

- Chapter 7—Environmental Assessment. Briefly describes effluent quality and loads from CAAP facilities, and summarizes literature relating to water quality and aquatic ecosystem effects of aquaculture effluents.

- Chapter 8—Environmental Benefits of Final Regulation. Summarizes the methods and results for estimating monetized benefits associated with the rule.

- Chapter 9— Other Regulatory Analysis Requirements. Presents EPA's assessment of the nationwide costs and benefits of the regulation pursuant to Executive Order 12866 and the Unfunded Mandates Reform Act (UMRA).

1.5 REFERENCES

USDA (U.S. Department of Agriculture, National Agricultural Statistics Service). 2000. *1998 Census of Aquaculture*. Also cited as 1997 Census of Agriculture. Volume 3, Special Studies, Part 3. AC97-SP-3. February.

USDA/NASS (U.S. Department of Agriculture, National Agricultural Statistics Service). 2002. Special tabulation request submitted to USDA NASS. Information relayed to EPA and Eastern Research Group, Inc. March 6.

USEPA (U.S. Environmental Protection Agency). 2004. *Development Document for the Final Effluent Limitations Guidelines and Standards for the Aquatic Animal Production Industry.* Washington, DC: U.S. Environmental Protection Agency, Office of Water.

USEPA (U.S. Environmental Protection Agency). 2003. Effluent Limitations Guidelines and New Source Performance Standards for the Concentrated Aquatic Animal Production Point Source Category; Notice of Data Availability; Proposed Rule. 40 CFR Part 451. *Federal Register* 68:75068-75105. December 29.

USEPA (U.S. Environmental Protection Agency). 2002. Detailed Questionnaire for the Aquatic Animal Production Industry. Washington, DC: OMB Control No. 2040-0240. Expiration Date November 30, 2004.

USEPA (U.S. Environmental Protection Agency). 2001. Screener Questionnaire for the Aquatic Animal Production Industry. Washington, DC: OMB Control No. 2040-0237. Expiration Date July 26, 2004.